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Nuclear Proliferation Trends Through 1987

National Intelligence Estimate

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NIE 4-82

NUCLEAR PROLIFERATION TRENDS THROUGH 1987

Information available as of 16 July 1982 was
used in the preparation of this Estimate.

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THIS ESTIMATE IS ISSUED BY THE DIRECTOR OF CENTRAL INTELLIGENCE.

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The Central Intelligence Agency, the Defense Intelligence Agency, the National Security Agency, and the intelligence organizations of the Departments of State, Treasury, and Energy.

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CONTENTS

	<i>Page</i>
SCOPE NOTE	1
KEY JUDGMENTS	3
DISCUSSION	9
Global Trends.....	9
Nuclear Suppliers.....	10
Third World Attitudes.....	11
Effectiveness of the NPT and the IAEA.....	11
Regional Trends.....	14
South Asia.....	15
Near East.....	17
Latin America.....	20
East Asia.....	23
Africa.....	24
Implications for US-Soviet Relations.....	25

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SCOPE NOTE

This Estimate focuses on trends in nuclear proliferation that—over the next five years—will impact upon US interests. The paper augments individual country studies by assessing the regional impact of proliferation trends and identifying trends that affect the proliferation issue globally.

Many industrialized countries such as Japan and West Germany are not included in the discussion of potential nuclear weapon states, even though they already have extensive nuclear capabilities that could be used to produce weapons. The altered political circumstances that would lead such countries to produce nuclear weapons almost certainly would entail overriding implications for the United States, beyond the scope of this paper.

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KEY JUDGMENTS

Over the next five years, efforts to slow the spread of nuclear weapons capabilities will become more difficult. Several global trends contribute to a judgment that the current international nonproliferation regime is in trouble:

- The mechanisms by which nuclear technology spreads are shifting, pointing to an accelerated diffusion of weapons-related capabilities among developing countries.
 - In particular, sources of nuclear material and technology, traditionally available only in advanced states, are expanding among the developing states—for example, Brazil and Argentina. China also is beginning to export nuclear materials. These countries are unlikely to adopt unilaterally nuclear export policies as strict as those of the advanced states.
 - Commercial sources of technology within the advanced states also have become a more difficult proliferation problem. The emergence of brokers specializing in the discreet acquisition of nuclear-related equipment and in the circumvention of government export policies has reduced the effectiveness of existing nuclear export restrictions.
- The development of small nuclear forces has become increasingly feasible, even without nuclear tests. The necessary time gap between the production of fissile material and the production of nuclear weapons has thus become narrower. The room for diplomatic action by the United States or others—aimed at preventing states from producing nuclear weapons—therefore has decreased.
- The progress of particular states toward nuclear weapons capabilities is likely to aggravate regional political tensions that will complicate diplomatic efforts aimed at preventing nuclear weapons production.
- The credibility of the International Atomic Energy Agency's safeguards system has been declining in recent years and could easily erode further. Evidence of weaknesses in the system is growing here and in foreign capitals—a trend that could lead to a

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general consensus that the IAEA is not capable of ensuring the effective implementation of nonproliferation safeguards agreements. Unless countered, such a consensus would increase the security concerns of some states and lead others to lower their estimates of the risks involved in violating safeguards.

- Developing countries are becoming more unified and influential in international nuclear-related forums. They generally are inclined to identify superpower disarmament, technology transfer, and the discriminatory nature of the Non-Proliferation Treaty as problems needing attention before nuclear proliferation itself. This trend will increase the resistance of developing countries to international efforts aimed at undertaking new nonproliferation initiatives or strengthening existing systems.

Nuclear proliferation will become a greater threat to US interests over the next five years. On one level, the spread of nuclear weapons capabilities to additional countries will add to the long-term nuclear threat to US citizens and property. On a separate plane, even before additional states can acquire nuclear weapons, their research and development programs will exacerbate regional political tensions. This disruptive aspect of the proliferation phenomenon will constitute the greater threat to the United States over the next five years. At a minimum, in the more volatile areas of the world, nuclear proliferation will threaten US efforts to enhance stability and to improve US security relationships:

- Stability in South Asia will be seriously weakened as Pakistan approaches a nuclear weapons capability threatening to India.
 - The potential for a preventive military strike by India, the consequence of which could well be a fourth Indo-Pakistani war, will increase.
 - The likely alternative is that India will establish its own nuclear force, thus making India and Pakistan the first pair of nuclear armed adversaries in the Third World.
 - When Pakistan achieves the capability to test a nuclear device, the value it places on its security ties with the United States may slow Pakistan's nuclear efforts, including the deferral of a nuclear test. In the meantime, Pakistani efforts to amass plutonium could jeopardize the US-Pakistani relationship.
- Israel

Its attack against Iraq's nuclear research center last year illustrates the destabilizing implications of further movement toward

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nuclear proliferation in the region. Israeli concerns will persist, particularly as both Iraq and Libya will continue their attempts to obtain a nuclear weapons capability.

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- Nuclear trends in other regions also point to potential problems for the United States.

- In Latin America, efforts by Argentina and Brazil to develop unsafeguarded nuclear-weapons-related capabilities threaten nonproliferation efforts globally. Differences with these states over the need for comprehensive nonproliferation safeguards and the undesirability of so-called peaceful nuclear explosives will tend to hamper US efforts to restore influence in the region.

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- US relations with South Korea and Taiwan will continue to be strained as both governments react to internal pressures to acquire sensitive nuclear fuel cycle facilities. Both will press the United States to help ensure their energy security, hoping for eventual US approval for their acquisition of such facilities.

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- In Africa, the implications for the United States will depend heavily on whether Pretoria continues to keep its nuclear weapons options hidden. South Africa at present probably either has nuclear weapons or could produce them on short notice. Overt activity, such as the underground nuclear testing that was planned in the 1970s, would create considerable foreign pressure for a United Nations resolution imposing broad sanctions on South Africa. The available evidence does not permit confident predictions about future South African nuclear policy.

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- Trends in nuclear proliferation increase the chances of some form of nuclear terrorism:
 - The increasing number of foreign facilities capable of producing special nuclear material expands the potential sources of material for terrorists and increases the difficulty of refuting false threats. Heightened public sensitivity to nuclear hazards of nuclear power reactors, publication of nuclear weapons design information, and press reporting of existing inadequacies in the physical protection of nuclear material all combine to increase the likelihood and potential impact of a nuclear terrorist/extortionist hoax.
 - The potential for terrorist fabrication of a nuclear weapon will remain low. The most likely forms of nuclear-related terrorist incidents will be attacks on nuclear power plants in Western Europe and attacks against US nuclear weapons deployed overseas.¹

The above trends have major implications for US-Soviet relations:

- The pattern of US-Soviet cooperation and general harmony in nonproliferation efforts over the past 15 years is based on a conviction that the spread of nuclear weapons threatens both states.
- Nevertheless, such cooperation may be severely tested in the years ahead. While sharing a desire to discourage nuclear proliferation, the United States and the Soviet Union will have conflicting national interests to protect in the regions where additional countries actually do acquire nuclear weapons. Nuclear proliferation in South Asia, for example—together with sustained superpower competition for influence in the region—could damage cooperation on nonproliferation efforts in other regions, particularly the Near East.

In a more general and far-reaching sense, nuclear proliferation has an impact on the US-Soviet relationship because of the extent to which nuclear proliferation affects US and Soviet influence and interests asymmetrically:

- The issue creates difficulties for the United States in its bilateral relations with nearly every state mentioned in the regional

¹ For a detailed discussion of nuclear terrorism, see SNIE 6-78: *Likelihood of Attempted Acquisition of Nuclear Weapons or Materials by Foreign Terrorist Groups for Use Against the United States*, and the recent Memorandums to Holders.

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discussions, a situation the Soviet Union can be expected to exploit in order to undercut US influence. The United States and its allies have far greater equity in strategic and economic ties with most of these countries than does Moscow.

- The nonproliferation issue also will continue to be a divisive element within the Western Alliance, as the different members compete for nuclear exports and react differently to regional proliferation-related developments.
- Instability in the Middle East and South Asia created by the spread of nuclear weapons—and by the progress of certain states toward such capabilities—will be likely to damage Western interests more than Soviet interests.

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Nuclear Capabilities of Countries of Major Proliferation Concern

Legend:



A tested nuclear explosive



Significant nuclear-explosives design/development

Available plutonium^aAvailable highly-enriched uranium^a

Unsafeguarded

Safeguarded

Significant research reactor^b

Power reactor(s)



Reprocessing



Enrichment

Country ^c	Nuclear Capabilities/Accomplishments Current	Nuclear Capabilities/Accomplishments Expected Enhancements Through 1987	Earliest Possible Nuclear Test
India			Tested 1974
South Africa			Anytime
Pakistan			1983
Argentina			1984
Brazil			Late 1980s
Taiwan			1985
South Korea			Late 1980s
Iraq			1990s
Libya			1990s

^a Bomb-significant quantities; unsafeguarded or diverted.^b Produces at least 2 kg of plutonium annually.^c All of the listed countries have fighter-bomber aircraft capable of delivering nuclear weapons.

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DISCUSSION

Global Trends

1. Nuclear-proliferation-related trends in individual countries combine to pose some common problems for the United States because of the global character of the nonproliferation regime. Nuclear weapons development in one region can affect proliferation trends in other regions because of the impact on global perceptions of such issues as the utility of the Non-Proliferation Treaty (NPT), the effectiveness of the International Atomic Energy Agency (IAEA) safeguards system, the likely reaction of powerful states to new arrivals in the nuclear weapons club, and the feasibility of nuclear-weapons-free zones. Other factors that link differ-

ent regions include the nuclear export policies of major nuclear suppliers, the play of nuclear issues in the North-South context, and Third World emphasis on superpower disarmament issues.

2. We have identified several trends of a global nature that are likely to influence adversely the course of nuclear developments in individual regions and countries. These trends include (1) the emergence of a growing number of nuclear suppliers, (2) an increasing number of Third World states likely to take an active role in resisting certain nonproliferation initiatives, and (3) decreasing credibility of the IAEA and its safeguards system coupled with generally low regard for the NPT in the developing countries.

Early Nuclear Weapons in the Developing World

The development and dispersal of basic scientific knowledge and technologies over the past 30 years have ensured that nuclear weapons designers of the future will not have to retrace all the difficult steps of the earliest nuclear weapons programs. Solid-state electronics have increased the reliability of fusing and firing systems, for example, while decreasing weight and bulk. Even more important in reducing weight and size are improvements that have been made by explosives industries in precision detonation capabilities. The availability of certain weapons-related nuclear data, design information inadvertently declassified, and high-speed computers will permit greater confidence in designs that otherwise might not emerge until a series of test explosions had been conducted.

As a result, new nuclear weapon states probably will be able to establish reliable, small nuclear forces on the basis of a single, successful, nuclear test. First-generation nuclear weapons are likely to be bombs weighing 1,000 kilograms or less and having a diameter of 80 centimeters or so. Western and Soviet sales of fighter-bomber aircraft appear to ensure that new nuclear weapon states will have credible delivery capabilities for such weapons.

An increasing number of countries will be able to develop small nuclear forces in the absence of even a single nuclear test explosion. Uncertainties concerning weapon

performance will be small enough that some governments may be willing to commit resources, and a measure of security dependence, to the stockpiling of untested weapons. This will be particularly so in situations where the government expects to have time—in a worsening security environment—to explode a test device and to incorporate modifications into the nuclear force.

Weapon yields chosen without nuclear testing, or based on a single test explosion, probably would be limited to about 20 kilotons. Further testing would open the door to higher yields—or smaller warheads—attainable through the development of boosted and thermonuclear weapons.

An important implication of this assessment is that the room for diplomatic action by the United States and others—aimed at preventing states from developing nuclear weapons—is decreasing. The time gap between producing fissile material and producing nuclear weapons has become narrower. Fundamental assumptions about timely warning of foreign decisions to use safeguarded material in nuclear weapons—assumptions implicit in the structure of international nonproliferation arrangements dating back to the 1960s—have gradually become less valid. Policies and treaties aimed specifically at deterring states from exploding nuclear devices will become less effective in obstructing the production of weapons.

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Nuclear Suppliers

3. Cooperation among nuclear supplier-state governments, in the area of proliferation-related export policies, has gradually and steadily improved since formation of what is known as the Zaanger Committee in 1971 and the informal "London" nuclear suppliers group in 1975. This improvement—through bilateral contacts—has enabled supplier governments to enhance the use of export controls as a means of slowing the spread of sensitive nuclear technology. These gains are being undermined by two factors:

- Private firms are becoming more active in nuclear-related exports. The uranium enrichment programs of Western Europe, for example, have led to the involvement of many firms that lend developmental or manufacturing expertise to government-controlled projects. In many instances the product line of such a firm does not subject the company to scrutiny as a "nuclear" firm. At times these firms are able to export key items such as valves or even centrifuge components without their governments' knowledge. The dual-use nature of many important items frustrates efforts at regulation, particularly for foreign governments. Moreover, the possibility of buying nuclear facili-

ties piecemeal has led to the emergence of special consultants and brokers, operating at the fringes of legality and allowing for the circumvention of governmental export restrictions.

- New supplier states are emerging among the developing countries.

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The new suppliers' policies concerning nuclear assistance are not likely to take shape until significant export opportunities develop, but several observations are applicable. Most of the potential new suppliers are not parties to the NPT, and most are attempting to develop their own nuclear programs in the face of export restrictions entailing the application of safeguards. These new supplier states would be unlikely to authorize exports of nuclear materials and assistance that would contribute significantly to any regional nuclear proliferation threat they themselves might face but, in general, exports to other regions would pose fewer problems for them. Their view of the larger proliferation picture—to generalize—appears to be that the global threat posed by nuclear proliferation is small compared with the danger

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inherent in superpower nuclear weapons stockpiling. At the same time the commercial and political benefits to be gained from nuclear exports could be large for these new suppliers. In general, therefore, they are unlikely to adopt unilaterally nuclear export policies as strict as those of the advanced states. The likely consequence of additional Third World sources of nuclear technology, combined with strict export controls by advanced states, would be an increase in the level of nuclear cooperation among developing countries.

4. China's recent entry into the nuclear export business warrants special attention. Although not strictly representative of the above trend in new supplier states, recent Chinese sales of unsafeguarded heavy water and enriched uranium to Argentina—either through direct sales or through intermediaries—illustrate the potential for unbridled nuclear exporters to undermine international nonproliferation efforts. China has exported enriched uranium to South Africa through West European intermediaries, and has considered sales to several other developing states as well. Although China appears to be in the nuclear market to stay, concern about its image and a desire for foreign nuclear technology may induce Beijing to accommodate some Western views on proliferation. China does not appear ready to cooperate formally, however, with the international nonproliferation regime. It is doubtful that Beijing in the near term will require international, IAEA safeguards as a condition of export.

Third World Attitudes

5. Since the drafting of the NPT in the 1960s, developing countries generally have contributed little effort to limiting nuclear proliferation in the Third World beyond joining the NPT. (Mexico has been a notable exception.) The viewpoint of developing states has generally been that superpower disarmament and nuclear assistance to developing countries are more pressing issues. This attitude prevailed at the 1980 NPT Review Conference and defeated the efforts of advanced states to secure a formal endorsement of the treaty as an effective agreement, although many states recognized the importance of the NPT for international security. This attitude also led developing states to cooperate last year in attempting to elect one of their own representatives to head the IAEA when Director General Eklund's term expired. (Though the attempt

failed, some concessions were obtained in the appointment of Third World nations to other IAEA posts.) Preparations for an international conference on the peaceful uses of nuclear energy next year indicate that Third World states are organizing to exploit that forum as well. Over the next five years, efforts to win the cooperation of developing states in improving the global nonproliferation regime probably will remain difficult, partly because the preferred focus on superpower disarmament is one of few issues on which the nonaligned movement can achieve consensus, and because the subject of nuclear assistance fits neatly into the context of the contentious North-South issue of aid to developing countries.

6. Third World interest in technology transfer is reinforced by the gradual spread of nuclear power reactors to additional states. Table 2 shows the growth in developing countries pursuing nuclear power programs and likely to develop a more direct and sustained interest in nuclear trade issues. In international forums, the observed tendency of developing countries to cooperate in resisting nonproliferation initiatives is generally likely to be strengthened as the number of states committing themselves to billion-dollar nuclear programs grows.²

Effectiveness of the NPT and the IAEA

7. The global nonproliferation regime clearly is in trouble, although efforts are being made to strengthen it (see inset). Concerning the NPT, broad disenchantment among developing states is focused on Articles IV and VI, which call for advanced countries to share their nuclear technology with developing countries and for established nuclear weapon states to work toward disarmament. Unless developing states see progress on these two issues, the NPT is likely to encounter greater disaffection in the 1985 review. In the interim, proliferation-related events could lead to a general judgment that the NPT is unable to fulfill its titular function, possibly creating the conditions for

² The opposite potential effect of nuclear growth—namely, a growing concern among developing states about proliferation as their neighbors begin nuclear power programs—appears less likely. For most of the candidate countries in table 2, the start of nuclear power programs would be only a small step toward nuclear explosives production capabilities. And although some developing states would become concerned, these states generally are also the ones most interested in keeping their own nuclear weapons options from becoming encumbered by added proliferation controls.

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Table 2
Developing Countries Pursuing
Nuclear Power Programs

1971	1981	1982-87	
		Imminent Additions	Other Candidates
Argentina	Argentina	Egypt	Algeria
India	Brazil	Libya	Bangladesh
Pakistan	Cuba		Chile
South Korea	India		Indonesia
Taiwan	Mexico		Iran
	Pakistan		Iraq
	Philippines		Israel
	South Africa		Kuwait
	South Korea		Morocco
	Taiwan		Nigeria
	Yugoslavia		North Korea
			Saudi Arabia
			Syria
			Thailand
			Tunisia
			Turkey
			Venezuela

initiatives aimed at drastically amending the treaty or for moves to withdraw from the treaty. Any amendment of the treaty—whether favorable or unfavorable to the United States—would probably be attainable only at the cost of considerable friction between advanced and developing states. Depending on the course of North-South issues generally and the progress made in disarmament negotiations, the cohesion of developing states on the issue of NPT inadequacies would be likely also to cause problems between the United States and its allies, which have varying sensitivities to Third World pressure, varying attitudes toward disarmament, and often disparate views on tactics for combating proliferation.

8. The International Atomic Energy Agency faces a likelihood of growing problems. It implements the safeguards required by the NPT or other agreements with non-NPT parties, and serves as a conduit for information and technical assistance to its members. The IAEA traditionally has sought insulation from the political issues debated in some other international forums. The insulation has been less effective in the past decade, however, as the member states of the agency have been pressed by Arab and African representatives to increase the isolation of Israel and South Africa. Growing politicization of the agency could further impair the ability of the IAEA to function

International Nonproliferation Initiatives

A variety of international undertakings have been proposed by states interested in inhibiting the further spread of nuclear weapons. Most proposals involve either additional treaty obligations or an internationalization of nuclear materials production and storage.

The first category includes proposals to create nuclear-weapons-free zones in the Near East and in South Asia, modeled in some instances after the Latin American (Tlatelolco) treaty. An important consideration is that

certain states

would already be assumed by neighboring states to possess nuclear weapons, which raises the less ambitious idea of a nuclear-explosion-free zone. Also in this category are proposals for more stringent test limitations that would include not only existing nuclear weapon states but potential nuclear weapon states as well.

The second category includes a wide range of ideas aimed at inducing states to surrender control over weapons-usable nuclear materials, and to forgo indigenous production of such materials, by offering participation in multinational ventures. Iran's participation in the French-led uranium enrichment consortium, Eurodif, was an example. Other proposals, for international nuclear fuel storage facilities, have offered a way to relieve states of the burden of crowded spent-fuel facilities without the need for reprocessing in the near term. Similar proposals address the possibility of international reprocessing facilities, with a variety of ideas for returning the energy value of plutonium to participating states without necessarily returning the plutonium itself.

The IAEA is pursuing a number of efforts—including long-term research to improve safeguards technology—that could lead to improvements in the international nonproliferation regime. One idea under discussion involves international storage of the surplus plutonium of member states. Another set of discussions is proceeding under a special committee on assurances of nuclear fuel supply, at the particular urging of developing countries. Though not the specific objective of the developing states, the committee work could lead to international fuel supply guarantees that would help to erase energy-independence arguments that are used to justify sensitive nuclear projects in individual states. In developing countries, such indigenous projects nearly always have dubious or clearly negative economic aspects.

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reliably as an impartial watchdog on proliferation matters.

9. Compounding the political problems for the NPT and the IAEA, confidence in the efficacy of IAEA safeguards is declining and could erode rapidly if serious violations were made public. Much would depend on whether the IAEA itself reported the violations or, conversely, if it were to become publicly known that IAEA officials had covered up suspicious data. A number of countries are aware of such data or believe they know of safeguards violations committed by their neighbors. India probably will have the greatest incentive to reveal information that would challenge the IAEA safeguards system while embarrassing Pakistan. Israel, if it obtained convincing evidence of any Iraqi violations, would be likely to air that information in the context of future international discussions about its bombing of the Iraqi nuclear center last year. Chile, frustrated by the course of its territorial dispute with Buenos Aires, might elect to embarrass and discredit its rival [redacted]

[redacted] to prompt an investigation of Argentina's compliance with safeguards agreements.

10. Judging by past Libyan and Iraqi uranium procurement activities and by reports of Argentine and Pakistani reprocessing-related activities, we believe the trend is toward a global accumulation of information damaging to the IAEA. An increasing number of people and governments are likely to become convinced of serious IAEA limitations. In the absence of the IAEA's taking substantial steps to correct current deficiencies, the probability of a major indictment of IAEA effectiveness will be fairly high in the coming years, possibly leading to a general consensus that the IAEA is not capable of ensuring the effective implementation of nonproliferation safeguards agreements. One consequence of a general loss of faith in IAEA safeguards would be heightened concern by some states about the ambitious nuclear programs in neighboring countries. Moreover, any state contemplating safeguards violations would be likely to lower its estimate of the chances of detection. On balance, global nonproliferation efforts could be significantly impaired. Reduced confidence in IAEA safeguards could have a serious adverse impact on Western firms engaged in the nuclear trade.

Implications for Nuclear Terrorism

Nuclear proliferation trends influence the prospects for some forms of nuclear terrorism.⁵ During the period of this Estimate, the ability of subnational groups to acquire nuclear materials and to fabricate a workable nuclear device probably will remain low. The technical skills required probably will remain beyond the capabilities of well-known terrorist groups, and special nuclear material will remain difficult to acquire.

On the other hand, the potential for terrorist groups to carry out a credible nuclear explosives *hoax* is increasing considerably. There are three reasons for this assessment. First, the difficulty of disproving false claims is increasing. Established producers of fissile material have been able in the past to discredit reports of unauthorized possession of fissile material by checking their own inventories, and by placing some confidence in being able to consult with other producers. Political barriers will obstruct frank and reliable exchanges with the new producers concerning the possibilities of their having lost weapons-usable material. Thus, although the probability of subnational access to fissile material may be low, our ability to verify or refute reports of missing material may be even lower. Accidental declassification of nuclear weapons design information in recent years has further increased the difficulty of dismissing potential terrorist claims.

Second, the inability of the international community to fully account for stocks of special nuclear material will increase the number and credibility of scenarios for its acquisition. Both the terrorist group contemplating a hoax and the victim contemplating a terrorist's threat would be mindful of the enhanced potential authenticity of a nuclear blackmail attempt.

Third, public concern in the event of a publicized threat probably will become more difficult to manage. Global reactions to the Three Mile Island accident in 1979 heightened a long-term sensitivity to nuclear hazards to the populace. Public awareness of trends in nuclear proliferation will be based largely on press reporting, which has tended to err on the side of overstatement concerning nth-country capabilities and the ineffectiveness of safeguards. The public, at the same time, will not have access to intelligence resources that might detract from the credibility of publicized threats. Well-organized antinuclear lobbies in Western states would be quite likely to act in ways that would lend credibility to a publicized nuclear threat, in order to exploit its potential impact on domestic nuclear power programs or deployment of theater nuclear forces. The ability of Western governments to refute false nuclear threats confidently and persuasively probably is therefore declining.

⁵ For a detailed discussion of nuclear terrorism, see SNIE 6-78: *Likelihood of Attempted Acquisition of Nuclear Weapons or Materials by Foreign Terrorist Groups for Use Against the United States*, and the recent Memorandums to Holders.

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Regional Trends

11. Nuclear developments in different regions of the world vary in the level and nature of potential costs to the United States over the next five years. As discussed below, South Asian nuclear developments pose the most immediate threats to US interests. The Near East holds the greatest potential for nuclear-proliferation-related surprises that would have direct consequences for US policy. Latin American nuclear policies are becoming more critical with Argentina's progress toward a nuclear explosives option. Circumstances in the Far East will tend to keep the United States in the role of policing the nuclear programs in South Korea and Taiwan. South Africa's nuclear weapons and test program is likely to remain thinly veiled, with the potential to embarrass the United States and to complicate US relations with Pretoria and other governments in the region.

12. In each region the proliferation problem derives from past political circumstances. Present trends result from decisions made by small groups of leading officials—scientists and industrialists as well as politicians—based on considerations of national prestige, military security, bureaucratic interests, domestic politics, and personal motivations. Rarely have these decisionmakers had to account to their countrymen for their nuclear-weapons-related policies because of the extreme secrecy involved.

Nevertheless, foreign leaders will have to plan for potentially serious domestic and international repercussions should their nuclear weapons capabilities and policies be made known. Thus the timing of significant voluntary acts such as nuclear testing is certain to be captive to broad issues of internal and external politics, but the timetable is unlikely to be discernible to outsiders well in advance (see inset).

13. Considering, as it does, a five-year period, the discussion does not attempt to predict timetables or chains of events in each region. Rather the focus is on trends in order to identify likely changes in the overall nuclear proliferation problem for the United States. In each region, we have examined the trend of expanding

technical capabilities, for three reasons. The evolution of nuclear capabilities:

- Can be estimated fairly well and is not susceptible to rapid fluctuations.
- Offers insights into past policy decisions, sometimes the only reliable evidence concerning current policies.
- Can itself drive important political developments. (China's nuclear program led India to undertake some early nuclear-weapons-related research in the 1960s. Iraq's nuclear program prompted an Israeli air attack last year.)

14. It is a fundamental characteristic of the nuclear proliferation problem that once a country approaches

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a capability to produce nuclear weapons, a wide range of political developments becomes possible. India's nuclear test in 1974 was largely unrelated to the concerns about China that originally prompted the necessary research. The potential for miscalculations further multiplies the number of possible developments. Over the past year, for example, Indian advisers have been informing Prime Minister Gandhi on a regular basis that Pakistan could explode a nuclear device on short notice—a judgment that appears one-to-two years premature. Even President Zia of Pakistan believed mistakenly in 1979 that his country would be ready to explode a device in that year.

15. In the following discussion, therefore, we highlight the likely evolution of nuclear capabilities in potential problem countries and necessarily restrict the discussion of possible damage to US interests. We indicate in boxed text the potential scope and earliest likely timing of nuclear arsenals in several states. More comprehensive discussions of the various states' nuclear programs and policies are available in separate papers as indicated.

South Asia

16. Both Pakistan and India are preparing capabilities to produce nuclear weapons.⁴ Pakistan regards the development of nuclear weapons as critical to its long-term security, quite apart from its relationship with the United States. Pakistani nuclear activities have caused India to activate its own nuclear explosive development capabilities, which heretofore have been viewed by New Delhi primarily as capabilities for developing a nuclear deterrent against China.

17. New Delhi probably believes that Pakistan intends to stockpile nuclear devices.

believe that Pakistan has accumulated enough fissile material for a nuclear weapon to be assembled.

18. India is likely to try several methods of stopping or delaying Islamabad's nuclear weapons program. Diplomatic attempts are being made in response to a Pakistani call for negotiations toward a nonaggression

⁴For more detailed discussions, see SNIE 31-81, *Pakistan's Nuclear Weapons Program: The Next Three Years*, 17 November 1981; and SNIE 31/32-81, *India's Reactions to Nuclear Developments in Pakistan*, 8 September 1981.

pact, but the prospects for a significant reduction of tensions through talks are poor. Other likely tactics would include the use of sabotage, intimidation, and propaganda to delay the Pakistani program, although New Delhi probably would not depend heavily on the success of such measures.

19. Over the next few years, India is likely to judge that the prospects for achieving any significant delay in the Pakistani nuclear weapons program through diplomatic means are poor. New Delhi may try to induce Pakistan to tip its hand with regard to nuclear weapons development. The main objectives would be:

- To confront the nuclear threat openly in its incipient stages rather than after a prolonged Pakistani stockpiling effort.
- To provide a justification for Indian nuclear weapons production or preventive military action.
- To undermine the relationship between Pakistan and the United States.

Several tactics would be possible, including the following:

- Revealing sufficient information—or misinformation—to win support for demanding a formal investigation of Pakistani violations of nonproliferation safeguards agreements.
- A far less likely possibility would involve conducting a so-called peaceful nuclear test, with one aim being to prompt a Pakistani nuclear explosion.

20. Ultimately, if other tactics fail, India will face a choice of either using force to prevent Pakistani production of nuclear weapons or abandoning the preventive option. The decision would be likely to depend heavily on prevailing judgments about the costs and benefits of a fourth war with Pakistan, because any effective military action against Pakistan's nuclear facilities could well escalate rapidly to large-scale hostilities. We cannot predict with any confidence what India's decision would be. We note, however, that if New Delhi chose *not* to prevent Pakistan from producing nuclear weapons, that choice probably would entail a decision to establish an Indian nuclear strike force, in readiness to deter Pakistani use of nuclear weapons and to ensure India's continued preeminence in the region.

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21. On the Pakistani side, top government officials favor nuclear weapons development because they see it as a deterrent to Indian military action. Islamabad has doubts about the reliability of a security relationship subject to annual review by the US Congress. In addition, they suspect that US security assistance will not be sufficient to bring long-term stability to South Asia. Furthermore, the nuclear program enjoys overwhelming popular support. Nevertheless, while probably continuing to support the nuclear weapons program, President Zia probably will not reach any firm decisions about nuclear testing until late 1983 or 1984, when domestic production of fissile material is likely to make nuclear testing feasible for the first time. By that time, as noted above, New Delhi might already have reached some critical decisions concerning preventive military action or efforts to uncover Pakistan's nuclear weapons program. In the meantime, Pakistan may undertake clandestine efforts to reprocess nuclear fuel in violation of international safeguards agreements. By violating safeguards to recover plutonium from nuclear fuel, Pakistan could jeopardize its relationship with the United States.

22. Nuclear proliferation trends in South Asia point to a high potential for damage to US interests over the next five years and beyond. The likelihood of Indo-Pakistani preventive military action will remain significant. If New Delhi refrains from military action, the most likely result will be a continuation of nuclear weapons development in Pakistan and India, leading in all probability to their eventual emergence as Third World nuclear weapon states. The implications of nuclear weapons production by Pakistan and India would be considerable:

- US influence in the region would tend to erode—in the near term because US-Pakistani relations would be strained, and in the long run because India would be likely to assert a greater claim to influence over regional developments.
- In the early years of a nuclear arms race in South Asia, Pakistan's nuclear weapons command, control, and delivery capabilities would be likely to foster a launch-on-warning philosophy in Islamabad. It would be difficult for Islamabad to ensure *both* the adequate protection of nuclear weapons—from external attack and unauthorized use—and the rapid scrambling of nuclear-armed aircraft from airstrips that—because of Pakistan's

Potential Nuclear Weapons Production in South Asia

By the end of 1986 Pakistan could accumulate five to 10 enriched uranium implosion weapons and—assuming persistent violation or abrogation of safeguards—five to 10 plutonium weapons. Technical problems make the lower numbers more likely. Pakistan probably would design such weapons to be deliverable by F-16 and Mirage fighter/bomber aircraft. Missile capabilities are lacking during the period of this Estimate.

India already could produce about 25 plutonium weapons, beginning shortly after a decision to do so, if it broke peaceful-use assurances and used existing stocks of plutonium that are not subject to IAEA inspection. By 1984 India may be able to produce plutonium that is not encumbered by nonproliferation agreements—yielding at least enough material to produce about five weapons per year. By 1986 new unsafeguarded reactors could yield enough plutonium for an additional 20 weapons per year.

India also has the scientific and technical resources to develop boosted and thermonuclear weapons by 1986, assuming a willingness to resume nuclear testing. Such devices could be developed using currently available plutonium, without a deviation from India's stated policy concerning peaceful nuclear research. New Delhi probably would authorize the construction of nuclear-armed ballistic missiles if it decided to establish a nuclear force. India probably could not produce more than a few prototype missiles by 1986, however. The principal delivery system probably would be Jaguar fighter-bomber aircraft.

small size—would be vulnerable to Indian surprise attack. The potential for human error would be significant.

- Pakistan's security therefore would be liable to deterioration in the short term and, in any event, would almost certainly never reach the higher levels suggested by US-Soviet experience with mutual deterrence.
- The potential for nuclear technology transfer between South Asia and the Near East would increase as Indo-Pakistani tensions led the two adversaries to seek the good will of Arab oil producers.
- Contingency planning for US military operations in the Indian Ocean and littoral regions would be complicated by the increased possibility of nuclear weapons use. The likelihood of Indian conven-

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tional military intervention in conflicts affecting the region might also increase if New Delhi viewed nuclear weapons as further enhancing its status as a major power in the area.

because of extreme geographic and demographic vulnerabilities. Eventually, if and as the Arab states approach capabilities to produce nuclear devices, Israel will be strongly motivated to attack preemptively.

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- The pattern (since the late 1960s) of US-Soviet cooperation to discourage nuclear proliferation would not necessarily lead to similar cooperation in dealing with the problem of deployed nuclear weapons in specific countries. The pattern of US and Soviet sponsorship for the two adversaries in South Asia, in particular, would tend greatly to inhibit superpower cooperation.

Near East

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25. In June 1981 the Israeli Government took military action to disrupt the most threatening Arab nuclear program. Iraq's acquisition of a large research reactor represented an unacceptable potential for Iraqi acquisition of a nuclear weapon in the foreseeable future, in light of the reactor's plutonium production capability, the quantities of highly enriched uranium fuel in Iraq, and Iraq's advances in other related nuclear technologies. The reactor was destroyed by an air strike, and fuel shipments have ceased. Iraq retains significant laboratory-scale and pilot-scale equipment related to the production and reprocessing of nuclear fuel, and it is seeking to upgrade a small Soviet-supplied research reactor, but—lacking a sizable reactor—Iraq will not be able to generate significant amounts of plutonium during the period of this Estimate. Nevertheless, we judge that Iraq intends eventually to acquire a nuclear weapons capability despite its NPT commitments and will continue toward that goal. One effect of the Israeli raid may have been to increase Iraq's desire for secrecy in attempting to acquire nuclear-related assistance from foreign sources, which would increase the potential for Iraqi safeguards violations.⁶

26. Libya, like Iraq, is a party to the Non-Proliferation Treaty. But, under the leadership of Colonel Mu'ammar al-Qadhafi, Libya probably will continue to seek a nuclear weapons capability. Having failed to obtain nuclear weapons or fissile material from other states in the 1970s (evidently including the Soviet

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24. [redacted] Israel regards the progress of Arab states toward nuclear weapons capabilities as an intolerable threat, chiefly

Although not in itself a violation of safeguards, it is likely that both Iraq and Libya already have obtained significant quantities of natural uranium not yet reported to the International Atomic Energy Agency.

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Union, China, Pakistan, and India), Libya is attempting to develop indigenous nuclear capabilities. Technical discussions are under way with Soviet officials—and have been for several years—concerning the construction of a nuclear power plant. Such a project would be the focal point of an ostensibly peaceful nuclear power program. Additional emphasis is likely to be placed on clandestine purchases of nuclear materials, equipment, and technology. A variety of reports indicate that NPT obligations will not deter such clandestine activities. A shortage of trained personnel will seriously hamper the indigenous program, however, and suspicions about Libyan intentions will, in general, inhibit the major nuclear supplier governments from providing sensitive technology.

27. If international financing is made available, the Egyptian nuclear program is likely to make significant progress in the 1980s, including the construction of light water power reactors and possibly some nuclear fuel fabrication capabilities. Egypt is likely to maintain an assiduous regard for safeguards because of its dependence on the West for nuclear power reactors and associated fuel and its concern that it not create Israeli misgivings about its intentions.

28. On balance, we estimate that the present subdued nuclear-strategic situation in the Near East will continue through 1987 and that the nuclear issue will not significantly influence political developments in the region. Our confidence in this projection is not high, however, because of a variety of surprises that could occur. The impact of developments in South Asia on nuclear weapons aspirations in the Near East is one unquantifiable factor. Iran may restore the substantial nuclear development begun under the Shah. Various Middle East countries, not necessarily with weapons intentions, could institute nuclear programs that would contribute to Israeli anxieties. Saudi Arabia's disinterest in nuclear options could be replaced by a serious commitment to nuclear development efforts, possibly including a desire for access to Pakistani nuclear technology. Egypt might resurrect plans for a heavy water production plant and a natural-uranium-fueled reactor. Similarly, Syrian nuclear initiatives, while unlikely to yield significant progress over the next five years, will be troubling to Israel. The Arab countries most intent on developing nuclear weapons options—Iraq and Libya—might succeed in using oil supply leverage as a means of extracting nuclear materials and technology from supplier states.

Nuclear Stirrings in Iran and Saudi Arabia

Iran has been reexamining the civil nuclear program that was stopped in 1979. Iranian officials have indicated [redacted] an interest in having the firm complete at least one of the two reactors it had been building near Busher before the revolution. (Construction of the nuclear power station had been well advanced, but extensive deterioration in recent years might necessitate considerable rebuilding.) The Nuclear Technology Center at Esfahan, which had been undergoing a considerable expansion [redacted] is now to be completed by Iranian firms. Depending on the level of foreign assistance, Iran could have a sizable nuclear research program by 1987. Such a program would disturb the Iraqis and other neighbors, although Iran probably would not be in a position to produce nuclear weapons in this decade.

In Saudi Arabia, the Defense Minister has announced that the government is considering peaceful applications of nuclear power. A new council has been given responsibility for nuclear power development and is promoting the acquisition of civil nuclear research facilities. An indigenous program of graduate studies in nuclear engineering is to be established next year. Preliminary discussions have been held with various foreign organizations on the subject of nuclear cooperation.

A serious Saudi Arabian interest in nuclear energy—albeit strictly peaceful—could have significant implications for the United States because of the potential for nonproliferation issues to interfere with Western energy concerns and regional security matters. Saudi Arabia's policy to date not to accede to the NPT suggests that voluntary acceptance of full-scope safeguards would be unlikely.

A special relationship with Pakistan and growing ties to Taiwan would create some potential for acquiring sensitive nuclear assistance without safeguards. Serious differences with the United States over nuclear assistance—or between the United States and others over the issue of nuclear assistance for Saudi Arabia—would be quite possible.

Recent US efforts to secure foreign cooperation in limiting the transfer of nuclear technology from advanced states to the Near East might, if successful, prompt certain Islamic states to cooperate more effectively in the acquisition and development of nuclear capabilities.

29. If nuclear programs in the Near East proceed with little change from present patterns over the next

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five years, the potential for Israeli preventive strikes against Arab nuclear programs will be small. Even so, nuclear developments will create or contribute to several problems for the United States in the region:

- Pressure exerted by oil-producing states on individual European nuclear suppliers will maintain the potential for friction between the United States and other suppliers concerning nuclear export policy.
- Israel's sensitivity to Arab nuclear development will remain high, considerably higher than that of the US Government.

Moscow might also see in Israel's longer range missile development—and perceived US support for it—evidence of a growing anti-Soviet bias in the implementation of US nonproliferation policies.

Latin America

30. Argentina and Brazil are the only states in the region having major nuclear programs. They have reported sizable uranium deposits—assured reserves of at least 30,000 tons and 60,000 tons, respectively—which they plan to use primarily for indigenous power generation. Both countries are pursuing multibillion-dollar nuclear power programs that call for West German (and, in the case of Argentina, Canadian)

assistance in the development of local power reactor manufacturing capabilities. The programed assistance extends into the 1990s. The desire for foreign nuclear technology will tend to deter any overt production or testing of nuclear explosives over the next five years, especially in Brazil, but activities under way in both states indicate plans at least to develop the necessary capability. Both countries are developing extensive nuclear fuel cycle facilities.

31. Argentina has been interested in producing plutonium since at least the mid-1960s, when its first laboratory-scale reprocessing plant was built. Since then, Argentina has obtained nearly all the ingredients for an independent and unsafeguarded plutonium production capability, including a small unsafeguarded reprocessing facility that is nearing completion. Its major remaining requirement is an unsafeguarded research reactor. Such a facility was to be built during the period of this Estimate. Late reports reveal, however, that preparations to build the reactor have been canceled and that at least a portion of the funds earmarked for this project have been transferred to the reprocessing program. Argentina had indicated that the research reactor would be used for the production of radioactive isotopes and for the testing of materials for power reactors, but the intended capacity of the facility—100 megawatts (thermal)—indicates that it would also have produced significant quantities of plutonium.

It is significant that Argentina probably will begin to reprocess nuclear fuel from its Atucha-I power reactor—a safeguarded facility—in the near future, probably in 1984; the ability to produce *safeguarded* plutonium evidently would not have met all of the government's requirements.*

32. It is too soon to determine whether the cancellation of the research reactor project represents a long-term reorientation of the nuclear program or whether funds have been withdrawn from the project only temporarily to help defray expenses resulting from the recent hostilities with the United Kingdom. We have

* Indeed, Argentina's need for any plutonium is unclear. The Argentine plan ostensibly is to reuse plutonium in existing nuclear power reactors, which ordinarily use natural uranium—an abundant domestic resource that should last well into the next century. Argentine nuclear officials publicly have stated an intent to sell plutonium.

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speculated that Argentina's defeat in the Falklands might give a boost to the nuclear program by encouraging the belief in Buenos Aires that nuclear weapons—or merely a foreign perception that Argentina had such weapons—could have made a difference. The withdrawal of funds from the reactor project argues against that thesis. But the transferral of funds to support reprocessing efforts rather than to help rebuild Argentine military capabilities suggests that the government remains determined to produce plutonium. One element of the reprocessing program is the construction of a facility to reduce plutonium to metal—a form that is useful, in practical terms, only for manufacturing explosive devices. It is likely that Argentina, while deferring a long-range capability to produce unsafeguarded plutonium, nevertheless wishes to reprocess power reactor fuel because of the potential nuclear weapons capability that Argentina thereby would be seen to possess.

the benefits of nuclear testing probably could be gained without actually exploding a device. The incentives for nuclear testing thus do not appear to be great. At the same time, however, the various disincentives—including strained relations with neighboring states and with Western industrialized states, the potential for a long-term cutoff of foreign nuclear technology, uncertainty about the implications of possible Brazilian reactions—probably would not appear unmanageable to Buenos Aires.

35. Argentina's attitudes toward safeguards, its objections to ratifying the Treaty of Tlatelolco,¹⁰ and its rejection of the Non-Proliferation Treaty as unacceptably discriminating against developing countries suggest that Argentine policy regarding exports of nuclear materials and technology will not be helpful to global nonproliferation efforts. This issue has not arisen frequently in the past, because Argentina's ability to supply sensitive materials and technology has been quite limited. Over the next five years, Argentina's potential for nuclear assistance to developing countries will be considerably greater. The construction of a large unsafeguarded research reactor and the operation of a reprocessing plant—and possibly the completion of an indigenously built heavy water production facility—would represent impressive accomplishments to developing countries seeking nuclear assistance.

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34. Whether Argentina will choose to explode a nuclear device in the next five years is difficult to predict, although, at present, we would judge it to be unlikely. Elements of the Argentine military probably support nuclear testing and weapons development for national security purposes, but—considering the nature of Argentina's defense requirements—the military utility of such a program probably would not be worth the effort. Diplomatic and domestic political purposes might be more clearly served by a demonstration of nuclear weapons capabilities.⁹ But most of

36. Brazil views nuclear development as reducing its dependence on foreign energy resources and as enhancing its technological prestige abroad. A capability to explode a nuclear device would be useful in this latter regard, particularly if it were widely perceived but *not* demonstrated by a nuclear test. Viewed from Brazil's perspective, Argentina's nuclear program constitutes an incentive to develop contingency nuclear explosive capabilities. Argentina and Brazil are not military adversaries, but the two countries have a longstanding rivalry for influence in the region which has been somewhat muted in the last several years due to a willingness on both sides to reduce tensions and increase cooperation. Argentina's history of political

⁹ Certain political benefits of a nuclear weapons program could be obtained by developing and testing a "peaceful" nuclear explosive. Argentina believes that it would have the right to develop such explosives under the Treaty of Tlatelolco.

¹⁰ The Treaty of Tlatelolco is a Latin American nuclear-weapons-free-zone agreement. Argentina, Brazil, Chile, and Cuba have not yet brought the treaty into force. Argentina's objection to ratifying the treaty centers on the fact that the IAEA safeguards applied to it under the treaty could not accommodate the development of peaceful nuclear explosives. Brazil, which also asserts a right to develop nuclear explosives under the treaty, probably will not bring the treaty into force at least until Argentina does.

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instability also is a factor. Thus, indications of an Argentine intent to explode a nuclear device probably would prompt Brazil to plan a similar expression of nuclear weapons capability.

37. In this context, we assess reports of secret Brazilian nuclear-related research, including centrifuge uranium enrichment research, as evidence of some desire for nuclear weapons production capabilities. Some Brazilian officials have explicitly advocated nuclear weapons development—and plans reportedly exist for the development of ballistic missiles to carry nuclear warheads—but the limited size and diffuse nature of the clandestine research effort suggest that Brazil is not urgently pursuing a nuclear weapons program.

38. Brazil's primary effort in the nuclear field is the fulfillment of a 1975 agreement with West Germany for the purchase of a broad range of nuclear technology and facilities under safeguards. A small reprocessing facility is scheduled to go into operation by 1987. A uranium enrichment plant is to be built if small-scale efforts now under way show the German jet nozzle enrichment process to be economically sound. Most important to Brazil and to the Germans are two large power reactors now under construction.¹¹ Brazil's emphasis in this cooperative arrangement with West Germany has been the assimilation of technology that will enable Brazilian firms to become competent in the construction and operation of nuclear facilities. Various firms have been established since 1975 with German participation to achieve this goal.

39. West Germans also have helped Brazil to establish another facility—an experimental laboratory intended to assist Brazil to investigate the safety requirements associated with the reprocessing of irradiated nuclear fuel elements. The laboratory, as currently configured, has a negligible reprocessing capacity and is not subject to safeguards. A proliferation issue could arise in the future if the Brazilians were to modify the facility to increase its potential annual throughput.

40. Despite some discord concerning the pace of German technology transfer, Brazil may establish itself

¹¹ The agreement calls for Brazil to purchase at least two more power reactors, but their construction has been delayed and is likely to be postponed further because of revised power demand projections.

Potential Nuclear Weapons Production in Latin America

Argentina could begin in 1984 to separate safeguarded plutonium from power reactor fuel at a rate sufficient to produce one to four nuclear weapons per year. By 1987, if the recently canceled research reactor project were reinstated, Argentina could be able to produce unsafeguarded plutonium at a rate sufficient to build about five per year.

Delivery systems available to Argentina currently include A-4 and Mirage fighter-bomber aircraft and Canberra bombers. Efforts are being made to develop indigenous missile capabilities, but systems able to deliver nuclear warheads probably could not be available until the 1990s.

Brazil will not be able to produce nuclear weapons until the late 1980s even if it abrogates its safeguards agreements. A resultant cutoff of enriched uranium fuel would eventually force Brazil to shut down its nuclear power plants. The plutonium retrievable from the available power reactor fuel (although not well suited for weapons use) could permit the production of a few weapons per year in the late 1980s, if Brazil pursued such an unlikely program. Longstanding research and development of satellite launch vehicle technology could support the indigenous development of nuclear-armed ballistic missiles.

as a major nuclear supplier in the 1990s. Over the next five years, however, Brazil's potential for nuclear exports will be limited to the production of unenriched uranium dioxide, fabrication of certain heavy components for nuclear reactors, and the provision of technical information relating to the nuclear fuel cycle. The German agreement places limits on the retransfer of German technology to third parties, and any such transfer would be required to come under IAEA safeguards, but West Germany's ability to detect transfers and to enforce the terms of its accord would be uncertain in the case of a clandestine evasion by the Brazilians.

41. Nuclear trends in Argentina and Brazil point to potential difficulties for the United States in sustaining close bilateral relations with these states—a problem that became acute in the late 1970s, when the United States applied persistent pressure on Buenos Aires and Brasilia to modify their nuclear plans and policies. Both states reacted with strongly nationalistic opposition to this pressure at the time and would do so in the

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future. They regard the level of US pressure on their nuclear programs and policies as important determinants of the state of bilateral relations with the United States. The US objective of gaining full regional adherence to the Treaty of Tlatelolco—while ruling out the peaceful nuclear explosives development to which Argentina and Brazil claim a right under the treaty—will remain a source of potential conflict in bilateral relations. The potential for friction will increase when specific bilateral nuclear issues arise, such as when deadlines are approached for action under the US-Brazilian contract for uranium enrichment services. At such times their sustained interest in keeping nuclear explosives options open and their aversion to full-scope safeguards would inhibit the ability of the United States, under present laws, to contribute to their nuclear power and research programs.¹²

42. Trends in the region portend greater difficulty for the United States in achieving global nonproliferation objectives:

- Argentina and Brazil are likely to export nuclear materials and technology. Their nonproliferation requirements may be less stringent than those of the established guidelines of the London Suppliers Group.
- As they continue to deal successfully with nuclear suppliers, their emphasis on independent fuel cycle capabilities and stiff resistance to full-scope safeguards will encourage leaders in other Third World governments to expect similar policies to be feasible in their own countries. Resulting pressures on supplier governments will contribute to the difficulty of achieving an international consensus on appropriate nuclear export policy.
- Argentina's defeat in the Falklands war will, at the very least, strengthen its resolve to keep open all of its nuclear options.

East Asia

43. Nuclear trends in East Asia point to potential problems for the United States in reconciling nonproliferation objectives with the conflicting desire to

¹² Nuclear relations with Argentina currently are in a suspended state, and Argentina has arranged with the Soviet Union to obtain enriched uranium services that could not be obtained from the United States. Buenos Aires appears to be satisfied with this state of affairs.

maintain close and friendly relations in the region. Over the next five years, South Korea and Taiwan will continue to seek to ensure the availability of nuclear fuel and waste management services as an important element of their energy security planning. Lobbies within both governments will continue to press for the construction of indigenous reprocessing and, in the case of South Korea, enrichment research facilities, believing that such capabilities will become increasingly important as their nuclear power programs mature. At the same time, both South Korea and Taiwan have questioned the reliability of their alliance with the United States, giving them some incentive to develop nuclear weapons production capabilities as a backup to US security guarantees. Advocates of nuclear weapons development in both governments will continue to promote nuclear research because of its potential contribution to military security.

- US decisions appearing to signal a diminishing commitment to South Korea would increase the probability of its engaging in clandestine nuclear weapons development activity.
- In Taiwan, however, where there already is a perception of a declining US commitment, fear that secret nuclear weapons development would further accelerate this decline will act to discourage such activities.

44. Both South Korea and Taiwan have provided assurances to the United States that they will not undertake nuclear weapons development—assurances dating from a period in the mid-1970s when the United States discovered evidence of dedicated programs to develop nuclear weapons. If US support remains strong over the next five years, lobbying for sensitive nuclear research in Seoul and Taipei is unlikely to move either government to renounce these assurances to the United States. Nevertheless, the governments are concerned that the constraints that the United States wishes to impose on their nuclear fuel cycle research threaten their future energy security. They believe steps need to be taken over the next five years to begin developing capabilities to reprocess spent nuclear fuel—or to dispose of spent fuel in other ways—in order to avoid problems in the 1990s. They will press the United States to be helpful concerning their fuel management problems, and will hope to win approval eventually for relaxation of some US-imposed nonproliferation constraints. Unless the United

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States relaxes its opposition to their development of peaceful nuclear fuel cycle capabilities—or alleviates the problem through alternative arrangements—the nuclear issue is likely to become a more serious impediment to close relations with the two governments.

45. Were the United States to relax its opposition to indigenous sensitive facilities in Taiwan or South Korea, permitting the development of uranium enrichment and fuel reprocessing capabilities under IAEA safeguards:

- The probability would be small that either government would jeopardize its security ties with the United States by attempting to use its sensitive facilities to manufacture nuclear weapons clandestinely.
- Regional adversaries would react negatively. Nuclear issues would cause friction in US relations with China. North Korea would be concerned about the increased potential for a future South Korean nuclear weapons production program.
- The difficulty of denying sensitive nuclear technology to other states would increase. The distinction drawn by the United States and other nuclear suppliers between the proliferation threat posed by nuclear development in countries having advanced nuclear programs—such as Japan—and that posed by less advanced countries would be more difficult to defend.

46. Public North Korean statements and recent discussions between North Koreans and several nuclear suppliers suggest that P'yongyang has increased its interest in nuclear power development. (At present, North Korea maintains only a small nuclear studies program.) As in the past, the enormity of the financial burden involved in building nuclear power reactors, amplified by North Korea's lack of hard currency and its poor credit standing, probably will defeat any plans for starting a nuclear power program over the next five years.

Africa

47. The Republic of South Africa, over the past three years, probably has stockpiled a substantial quantity of highly enriched uranium. Indeed, it is possible [redacted]—that several test

devices or first-generation weapons already have been produced and stockpiled using this uranium. Thus, at the very minimum, South Africa probably has the capability to produce nuclear weapons on short notice. Under considerable international pressure, South Africa discontinued nuclear test preparations in the Kalahari Desert in early 1978; there have been no detectable signs of test preparation since then. However, a nuclear test alert was declared on 22 September 1979. It is still a matter of considerable disagreement as to whether a nuclear explosion occurred. Nevertheless, it raises the possibility that South Africa may already have tested a nuclear device.

48. South Africa's 20-year effort to develop a nuclear weapons capability has taken place against a backdrop of growing international isolation and a heightening sense of threat. Pretoria's security concerns include a need to demonstrate resolve for military prowess to both external and domestic audiences. In our view, the perception of a South African *potential* to build nuclear weapons now has greater value to Pretoria than nuclear weapons testing could have. Moreover, much of the political benefit associated with the explosion of a nuclear device has already been reaped by the South Africans because of the September 1979 event. Nevertheless, we judge that South African officials may still view nuclear testing as an important strategic objective. Whether Pretoria will continue to be satisfied with the present level of nuclear weapons capability, and with the present perception of others regarding South Africa's capability, is not discernible from past and present trends.

49. The implications of South Africa's nuclear policy for US interests over the next five years are most easily identified in the field of nonproliferation:

- South Africa's image as a latent nuclear weapon state will continue to serve as a pretext for other African states to threaten disassociation from their nonproliferation commitments.

50. Broader US interests also will be affected, although the impact will depend heavily on whether

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South African Nuclear Weapons Capabilities

Since 1978 South Africa has been operating a uranium enrichment facility, near Pretoria, which has produced highly enriched uranium. The estimated plant capacity would permit the production of two to four weapons per year. By 1987, Pretoria could have a stockpile of 15 to 30 weapons. It is not possible to determine how much material has been produced to date, however. (Technical problems have limited production rates in the past and may still do so.)

The availability of enriched uranium rather than plutonium gives Pretoria greater flexibility with respect to the design of reliable first-generation weapons. Gun-assembly weapons, smaller and lighter than the device dropped over Hiroshima, could be developed for delivery by Mirage aircraft in the South African inventory, and could be relied upon to explode without nuclear testing. With somewhat less confidence, on the other hand, twice as many implosion weapons could be produced using the same amount of uranium.

There are indications that South Africa intends to develop an indigenous line of nuclear reactors. During the next five years, South Africa is likely to construct a small reactor that will not be subject to nonproliferation safeguards. If so, the South Africans probably will develop a reprocessing capability and recover the plutonium generated by the reactor operations (possibly amounting to the equivalent of one weapon per year). There have also been some indications of consideration given to reprocessing fuel elements from the Koeberg reactors, though not in the context of weapons production.

South Africa's nuclear weapons capability remains hidden:

- Damage to bilateral relations with Pretoria because of US nuclear export restrictions has decreased in the recent past as South Africa has managed to secure fuel elsewhere for its nuclear power reactors. This trend probably will continue over the next five years as South Africa establishes its own fuel production capabilities. If South Africa conducts a nuclear test, however, the United States probably will come under considerable foreign pressure not to obstruct a UN resolution calling for severe sanctions against Pretoria.
- South Africa's possession of an unsafeguarded nuclear materials production capability is linked indirectly to certain US assistance, creating the

potential for future embarrassment. The Soviet Union has exploited that linkage from time to time in an effort to promote suspicion in Southern Africa concerning US policies in the region. Such propaganda has not had a significant impact in the past, partly because of apparent Western efforts to prevent Pretoria from manufacturing nuclear weapons. Further moves by South Africa to develop nuclear weapons, however, could enhance Moscow's opportunities for increasing its influence in the region.

Implications for US-Soviet Relations

51. Both superpowers will continue to have incentives to discourage nuclear proliferation over the next five years, but conflicting interests are likely to take on greater relative importance than in the past. Both countries find that proliferation trends in the Third World come into direct conflict with other foreign policy goals. Examples may be found in Moscow's nuclear dealings with Libya and the foreign policy difficulties that the United States faces in Pakistan.

52. If additional countries become declared nuclear weapon states, this will be a second factor likely to strain superpower cooperation. While sharing a desire to discourage nuclear proliferation, the United States and the Soviet Union would nevertheless have very different policy objectives in dealing with a particular country *after* it had opted to become a nuclear weapon state. This situation may confront the United States within the period of this Estimate. Moreover, the risk of damage in US-Soviet relations is increased by the probability that the first occurrence would involve Pakistan and India—two adversaries, with opposing superpower affiliations, joining the nuclear weapons club almost simultaneously. China's heretofore ambivalent attitude toward the acquisition of nuclear weapons by additional states¹³—and consequent Soviet suspicions about possible Chinese assistance to Pakistan—could compound the difficulty of reaching an understanding between the superpowers

¹³ In the 1960s China's policy was to justify the development of nuclear weapons by additional states—a policy that reacted to foreign pressure against China's own nuclear weapons. Beijing continued thereafter to describe nuclear weapons acquisition as a matter of sovereign right for individual nations, but China until recently was not interested in contributing to other countries' nuclear programs. As China establishes a role as a nuclear exporter, its activities will provide a clear indication of Chinese attitudes toward nuclear weapons development in other states.

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Soviet Efforts to Influence Libyan Nuclear Policy

The Soviet Union probably does not believe its own protestations that Libya is a stable, responsible state seeking peaceful nuclear capabilities. At the same time, Moscow probably is confident that it can prevent its own nuclear assistance from being used in a Libyan weapons program, and its involvement in the Libyan program arguably affords the Soviet Union an opportunity to monitor—and frustrate—progress toward nuclear weapons development. In recent years, however, Moscow appears to have placed a higher priority on broadening its influence in Libya than on preserving a maximum of control over Libyan nuclear activities.

Throughout the 1970s, Moscow's insistence on Libyan acceptance and fulfillment of obligations under the NPT was a persistent feature of the Soviet nuclear assistance program. Moscow did not agree to supply research and power reactors until Libya ratified the NPT, which it did in 1975. In the late 1970s, the Soviets evidently withheld progress in building the Libyan nuclear research complex at Tajura in order to press for Tripoli's negotiation and ratification of a general safeguards agreement with the IAEA. In the spirit of cooperation with the United States on nonproliferation matters, Soviet officials indicated their plans for additional measures (particularly the repossession of spent fuel) aimed at thwarting any Libyan nuclear weapons aspirations.

Since then, Soviet officials have been less candid with US counterparts in describing their Libyan nuclear assistance policies. Moreover, in contrast with past behavior, Moscow provided nuclear fuel for the Tajura research reactor without pressing Libya to complete the final legal arrangements needed to put IAEA safeguards into effect.

concerning mutually acceptable behavior toward new nuclear weapon states.

53. In a more general and far-reaching sense, nuclear proliferation has an impact on the US-Soviet relationship because of the extent to which nuclear proliferation affects US and Soviet influence and interests asymmetrically:

- The issue creates difficulties for the United States in its bilateral relations with nearly every state mentioned in the regional discussions, a situation

the Soviet Union can be expected to exploit in order to undercut US influence. The United States and its allies have far greater equity in strategic and economic ties with most of these countries than does Moscow.

- The nonproliferation issue also will continue to be a divisive element within the Western Alliance, as the different members compete for nuclear exports and react differently to regional proliferation-related developments.
- The regional importance of the states in question—causing neighboring states to refocus their foreign policies to accommodate a new threat. External powers will be likely to find their influence in the region somewhat reduced. Considering the states and regions of greatest proliferation concern, the impact will be felt adversely primarily by the United States rather than Moscow.
- Instability in the Middle East and South Asia created by the spread of nuclear weapons—and by the progress of certain states toward such capabilities—will be likely to damage Western interests more than Soviet interests.

54. Nevertheless, many of the factors that have fostered US-Soviet cooperation on nonproliferation goals in the past remain valid. Foremost among these is the danger to both the United States and the Soviet Union of becoming entangled in regional conflicts having a potential for escalation of nuclear weapons use. Additionally, the greater complexity and uncertainty that the spread of nuclear weapons would introduce into global power politics with the concomitant greater risk of superpower miscalculation is a danger that both countries would want to avoid.

55. In sum, while the United States and the Soviet Union will continue to share a common desire to inhibit nuclear proliferation, cooperation in nonproliferation efforts may become strained or damaged over the next five years. Moreover, even if the superpowers maintain a cooperative effort in the nonproliferation field, the trends discussed in this Estimate are likely to have an adverse impact on US influence abroad, compared with that of the Soviet Union.

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